

Reply to office action dated 12/16/04

AMENDMENTS TO THE CLAIMS

Claims pending at the time of the 12/16/04 Office Action:

1-20

Claims pending as a result of the present communication:

5 1-23

Cancelled claims:

none

New claims:

21-23

10 Claims amended in the present communication:

1, 8, 14, 17, and 19

Please amend the claims of the present application as set forth below.

15 1. (Currently amended) A fluid ejection device comprising:
a first substrate having a first surface, the substrate defining a fluid supply
conduit extending through the substrate from the first surface;
a stack of thin film layers having a first surface and a second surface, the
first surface of the stack of thin film layers being affixed to the first
surface of the substrate, the stack of thin film layers including at
20 least one fluid energizing element;

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a second substrate having a first surface affixed to the second surface of
the stack of thin film layers, the second substrate primarily
configured to filter fluid and not primarily to form fluid channels
and firing chambers and wherein the second substrate has at least
one fluid filter opening formed over the fluid-supply conduit; and,
5 a third substrate positioned over the second substrate and defining, at least
in part, multiple fluid channels and multiple firing chambers.

2. (Original) The fluid ejection device of claim 1 wherein the second
10 substrate comprises a polymer substrate.

3. (Original) The fluid ejection device of claim 1 wherein the second
substrate comprises a patternable polymer substrate.

15 4. (Original) The fluid ejection device of claim 1 wherein the second
substrate comprises a photo-imaginable polymer substrate.

5. (Original) The fluid ejection device of claim 1 wherein the third substrate
comprises a photo-imaginable polymer barrier layer.

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6. (Original) The fluid ejection device of claim 1 wherein the third substrate comprises a photo-imagable polymer substrate configured to perform the function of both a barrier layer and an orifice layer.

5 7. (Original) The fluid ejection device of claim 1 wherein the second and third substrates comprise the same material.

8. (Currently amended) A fluid ejection device comprising:
a substrate defining a fluid supply conduit;
10 a first layer assembly positioned over the substrate, the first layer assembly being primarily configured to provide electrical components including one or more resistors; and,
a second layer assembly positioned over the first layer assembly, the second layer assembly being primarily configured to form a filter and define fluid-feed passageways and firing chambers, wherein
15 the second layer assembly comprises at least one layer which extends across the fluid supply conduit and is primarily configured to filter fluid and not primarily to form a firing chamber.

20 9. (Original) The fluid ejection device of claim 8, wherein the at least one layer of the second layer assembly has a thickness of no more than about 20 percent of a thickness of a layer which forms the firing chamber.

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10. (Original) The fluid ejection device of claim 8, wherein the first layer assembly comprises multiple thin-film layers.

5 11. (Original) The fluid ejection device of claim 8, wherein the second layer assembly comprises a filter layer positioned adjacent the first layer assembly.

12. (Original) The fluid ejection device of claim 8, wherein the second layer assembly comprises at least three layers.

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13. (Original) A fluid ejection device comprising:
a substrate having a first surface and a second surface, the substrate defining a fluid supply conduit between the first surface and the second surface; and,

15 a generally elastic filter layer formed over the first surface, wherein the filter layer does not form sidewalls defining a fluid channel of the fluid ejection device.

14. (Currently amended) The fluid ejection device of claim [[8]] 13, wherein
20 the fluid channel is configured to supply fluid to a firing chamber.

15. (Original) A fluid ejection device comprising:

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a substrate defining a fluid supply conduit;

a generally elastic filter layer formed over the substrate in fluid receiving relation with the fluid supply conduit, the filter layer having a thickness; and,

5 an additional layer formed over the filter layer and having a thickness, wherein multiple fluid channels are formed in the additional layer and wherein the thickness of the additional layer is at least four times the thickness of the filter layer.

10 16. (Original) The fluid ejection device of claim 15, wherein the generally elastic filter layer comprises a polymer.

17. (Currently amended) A method comprising:

15 forming at least one thin film layer over a first surface of a substrate;

forming at least one generally planar elastic filter layer over the at least one thin film layer the generally planar elastic filter layer having at least one fluid filter opening formed therein; and,

forming at least one further layer over the generally elastic layer to form sidewalls which define at least in part multiple firing chambers.

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18. (Original) The method of claim 17 further comprising, after said acts of forming, forming a fluid supply conduit through the substrate between the first surface and a generally opposing second surface.

5 19. (Currently amended) A method comprising:
forming a first layer assembly over a first surface of a substrate wherein
the first layer assembly forms one or more electrical traces; and,
forming a second layer assembly over the first layer assembly, wherein
the first layer assembly comprises a first layer configured to filter
contaminants from a fluid and not to form electrical traces, the first
10 layer having at least one fluid filter opening formed therein over a
fluid supply conduit of the substrate, and at least one additional
layer formed over the first layer which forms at least a portion of
sidewalls which define multiple firing channels.

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20. (Original) The method of claim 19, wherein said forming a first layer of
the second layer assembly comprises forming a first layer which enhances
adhesion of the first layer assembly to the at least one additional layer of the
20 second layer assembly.

21. (New) A fluid ejection device comprising:

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a substrate defining a fluid supply conduit;
a first layer assembly positioned over the substrate, the first layer assembly being primarily configured to provide electrical components including one or more resistors; and,
5 a second layer assembly positioned over the first layer assembly, the second layer assembly being primarily configured to form a filter and define fluid-feed passageways and firing chambers, wherein the second layer assembly comprises at least one layer primarily configured to filter fluid and not primarily to form a firing chamber such that the at least one layer has a thickness of no more than about 20 percent of a thickness of a different layer which forms the 10 firing chambers.

22. (New) A fluid ejection device comprising:

15 a substrate defining a fluid supply conduit;
a first layer assembly comprising multiple thin-film layers and positioned over the substrate, the first layer assembly being primarily configured to provide electrical components including one or more resistors; and,
20 a second layer assembly positioned over the first layer assembly, the second layer assembly being primarily configured to form a filter and define fluid-feed passageways and firing chambers, wherein

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the second layer assembly comprises at least one layer primarily configured to filter fluid and not primarily to form a firing chamber.

5 23. (New) A fluid ejection device comprising:

a substrate defining a fluid supply conduit;

a first layer assembly positioned over the substrate, the first layer assembly being primarily configured to provide electrical components including one or more resistors; and,

10 a second layer assembly comprising at least three layers and positioned over the first layer assembly, the second layer assembly being primarily configured to form a filter and define fluid-feed passageways and firing chambers, wherein the second layer assembly comprises at least one layer primarily configured to filter fluid and not primarily to form a firing chamber.

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